

REMARKS

The remainder of this Amendment is set forth under appropriate subheadings for the convenience of the Examiner.

Amendments to the Claims

Claims 1 and 12 have been amended to delete the phrase of “about.”

Claim 11 has been canceled.

No new matter has been added.

Rejection of Claims 1-12 under 35 U.S.C. § 112, second paragraph

Claims 1-12 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner stated that because the phrases of “less than” and “greater than” define a clear end point to a range, and the word “about” contradicts this defined end point, the phrases of “less than about” and “greater than about” are indefinite. Also, the Examiner stated that because Claim 11 includes a composition that does not include M' element of Claim 1, Claim 11 is indefinite.

Claims 1 and 12 have been amended to delete “about” from the phrases of “less than about” and “greater than about.” As amended, Claims 1 and 12 are now definite, particularly pointing out and distinctly claiming the subject matter which applicants regard as the invention. Claims 2-10 depend from Claim 1, and thus these claims are also definite, particularly pointing out and distinctly claiming the subject matter which applicants regard as the invention.

Therefore, Claims 1-10 and 12, as amended, meet the requirements of 35 U.S.C. § 112, second paragraph. Claim 11 has been canceled. Accordingly, withdrawal of the rejection is respectfully requested.

Objection of Claim 11 under 37 CFR § 1.75(c)

Claim 11 has been objected to under 37 CFR § 1.75(C), as being improper dependent form for failing to further limit the subject matter of a previous claim.

Claim 11 has been canceled, thereby obviating the rejection. Withdrawal of the rejection is respectfully requested.

Rejection of Claims 1-6 and 8-11 under 35 U.S.C. § 102(b)

Claims 1-6 and 8-11 have been rejected under 35 U.S.C. § 102(b), as being anticipated by JP 2000-149,950 to Kitano (hereinafter "Kitano").

As amended, Applicants' invention of Claim 1 is directed to a composition that includes a core having an empirical formula $\text{Li}_x\text{M}'_z\text{Ni}_{1-y}\text{M}''_y\text{O}_2$ and a coating on the core having a greater ratio of cobalt to nickel than the core. M' is at least one member of the group consisting of sodium (Na), potassium (K), calcium (Ca), magnesium (Mg) and strontium (Sr). M'' is at least one member of the group consisting of cobalt (Co), iron (Fe), manganese (Mn), chromium (Cr), vanadium (V), titanium (Ti), magnesium (Mg), silicon (Si), boron (B), aluminum (Al) and gallium (Ga). As clearly indicated in formula $\text{Li}_x\text{M}'_z\text{Ni}_{1-y}\text{M}''_y\text{O}_2$, Applicants' invention of Claim 1 includes a core having ***M'' as a modifier of the Ni atom*** (i.e., the sum of mole ratios of Ni (1-y) and M'' (y) is one) ***and M' that is not a modifier of the Ni atom*** (i.e., the "z" value is independent of the mole ratio of Ni or the Ni modifier, M'').

The positive electrode material disclosed in Kitano includes only modifiers of Ni, as evidenced in the formula of $\text{LiNi}_{1-y-z}\text{Co}_y\text{M}_z\text{O}_2$, where M is a metal excluding Co and Ni. That is, in the material disclosed in Kitano, ***both Co and M are modifiers of the Ni atom***, and the sum of mole ratios of Ni (1-y-z), Co (y) and M (z) is always one.

There is no disclosure or suggestion in Kitano of a positive electrode material falling within the scope of Claim 1, i.e., including at least one member of the group consisting of Na, K, Ca, Mg and Sr and at least one member of the group consisting of Co, Fe, Mn, Cr, V, Ti, Mg, Si, B, Al and Ga. Further, there is no disclosure in Kitano of a positive electrode material that includes at least one member of the group consisting of ***Na, K, Ca, Mg and Sr as a non-modifier of the Ni atom*** because the material disclosed in Kitano includes ***M only as a modifier of the Ni atom***.

Therefore, the subject matter of Claim 1, as amended, is novel over Kitano. Claims 2-6 and 8-10 depend from Claim 1, and thus, the subject matter of these claims also is novel over Kitano. Claim 11 has been canceled. Applicants respectfully request reconsideration and withdrawal of the rejection.

Rejection of Claims 1-5 and 9-11 under 35 U.S.C. § 102(b)

Claims 1-5 and 9-11 have been rejected under 35 U.S.C. § 102(b), as being anticipated by JP 09-50810 to Toatsu *et al.* (hereinafter "Toatsu").

As discussed above, Applicants' invention of Claim 1 includes a core having M' as a modifier of the Ni atom and M'' as a non-modifier of the Ni atom, where M' is at least one member of the group consisting of Na, K, Ca, Mg and Sr, and M'' is at least one member of the group consisting of Co, Fe, Mn, Cr, V, Ti, Mg, Si, B, Al and Ga.

Toatsu discloses a lithium-nickel multiple oxide of formula $\text{Li}_x\text{Ni}_y\text{N}_z\text{O}_2$, where "N" is an element except Li, Ni and O. However, there is no disclosure or suggestion in Toatsu of distribution of the element of "N", e.g., as a modifier/non-modifier of the Ni atom. In particular, there is no disclosure or suggestion in Toatsu of a lithium-nickel multiple oxide that includes at least one member of the group consisting of Co, Fe, Mn, Cr, V, Ti, Mg, Si, B, Al and Ga as a modifier of the Ni atom and at least one member of the group consisting of Na, K, Ca, Mg and Sr as a non-modifier of the Ni atom, as shown in formula $\text{Li}_x\text{M}'_z\text{Ni}_{1-y}\text{M}''_y\text{O}_2$ of Claim 1.

Therefore, the subject matter of Claim 1, as amended, is novel over Toatsu. Claims 2-5 and 9-10 depend from Claim 1, and thus, the subject matter of these claims also is novel over Toatsu. Claim 11 has been canceled. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

Rejection of Claims 1-5 and 7-12 under 35 U.S.C. § 102(b)

Claims 1-5 and 7-12 have been rejected under 35 U.S.C. § 102(b), as being anticipated by JP 11-067,209 to Koji (hereinafter "Koji").

As discussed above, Applicants' invention of Claim 1 includes a core having M' as a modifier of the Ni atom and M'' that is not a modifier of the Ni atom, where M' is at least one member of the group consisting of Na, K, Ca, Mg and Sr, and M'' is at least one member of the group consisting of Co, Fe, Mn, Cr, V, Ti, Mg, Si, B, Al and Ga.

Koji discloses a base particle of formula $\text{Li}_a\text{Co}_b\text{Mn}_c\text{M}^1_d\text{Ni}_{1-(b+c+d)}$, where M¹ is at least one element selected from the group consisting of B, Al, Si, Fe, V, Cr, Cu, Zn, Ga and W. However, there is no disclosure or suggestion in Koji of a core having empirical formula $\text{Li}_x\text{M}'_z\text{Ni}_{1-y}\text{M}''_y\text{O}_2$, where M' is at least one member of the group consisting of **Na, K, Ca, Mg and Sr**, and M'' is at least one member of the group consisting of Co, Fe, Mn, Cr, V, Ti, Mg, Si, B, Al and Ga.

Rather, the base particle disclosed in Koji includes **Co, Mn and M'** as *modifiers of the Ni atom*, as is clearly shown in formula $\text{Li}_a\text{Co}_b\text{Mn}_c\text{M}'_d\text{Ni}_{1-(b+c+d)}$ (i.e., the sum of mole ratios of Co (b), Mn (c), M' (d) and Ni (1-(b+c+d)) is always one), and does **not** include **M'**, a non-modifier of the Ni atom, recited in Claim 1 of the instant application. The element M' of the base particle disclosed in Koji, which can be B, Al, Si, Fe, V, Cr or Ga, is an example of M'', but not M' of Claim 1 of the instant application.

Therefore, the subject matter of Claim 1, as amended, is novel over Koji. Claims 2-5 and 7-10 and 12 depend from Claim 1, and thus, the subject matter of these claims also is novel over Koji. Claim 11 has been canceled. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

SUMMARY AND CONCLUSIONS

Claims 1 and 12 have been amended to delete the phrase of "about." As amended, Claims 1 and 12 and Claims 2-10, dependent from Claim 1, are now definite. Also, the subject matter of Claim 1 is novel over the cited references, as discussed above. The subject matter of Claims 2-10 and 12, dependent from Claim 1, also is novel over the cited references. Claim 11 has been canceled.

Therefore, in view of the above amendments and remarks, it is believed that all pending claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By 

N. Scott Pierce

Registration No. 34,900

Telephone: (978) 341-0036

Facsimile: (978) 341-0136

Concord, MA 01742-9183

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